

### **REMARKS**

Applicants have amended claims 1, 7, 8, 10, 11, 22, 24-26, 37, 38, 47, and 48, and have cancelled claims 2, 3, 12, 13, 17-21, 23, and 27. Applicants acknowledge the Examiner's indication that claims 28-38 are allowed, and that claims 4-6 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

Claims 1, 4-11, 14-16, 22, 24-26, and 28-49, of which claims 1, 10, 22, 28, and 39 are independent in form, are presented for examination. The Examiner has made a number of rejections, suggestions, and objections, which Applicants address below.

#### **Claim Amendment Suggestions**

The Examiner has suggested amending claims 7, 8, 14, 15, 19, 20, 25, 26, 37, 38, 47, and 48 to specify that the carbon particles, and not the cathode as a whole, comprise between 25% by weight and 75% by weight of the expanded and non-expanded graphite. Applicants have amended the pending claims accordingly.

#### **35 U.S.C. § 102(b) – WO 99/34673 (Nardi)**

The Examiner has rejected claims 39-44 under 35 U.S.C. § 102(b) as anticipated by WO 99/34673 (Nardi). Claims 39-44 recite a cathode comprising expanded graphite particles having a total pore volume greater than about 0.1 milliliter per gram. But Nardi does not describe or suggest the claimed cathode.

The Examiner has stated that, "the total pore (void) volume of the expanded graphite particles [in Nardi] would inherently be higher than 0.1 mL/g. This can be calculated using real and apparent densities shown in Fig. 4." (October 29, 2003 Office Action, page 3). In other words, the Examiner has calculated pore volume using the real density of the expanded graphite particles, in combination with either their Scott density or their tap density. However, pore volume cannot be calculated using these values. In addition to including the graphite volume and the pore volume, the tap density and the Scott density also include the interstitial volume between graphite particles. Thus, pore volumes calculated using only the tap density or the Scott

density are inaccurate, and Nardi does not inherently describe or suggest expanded graphite particles having a total pore volume greater than about 0.1 milliliter per gram. Applicants therefore request that the rejection of claims 39-44 be withdrawn.

**35 U.S.C. § 102(e) – U.S. Patent No. 6,451,486 (Davis)**

The Examiner has rejected claims 22-27 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,451,486 (Davis). Applicants have cancelled claims 23 and 27, thereby rendering the rejection of those claims moot. Furthermore, Davis does not describe or suggest the cathode of amended claims 22 and 24-26, which comprises graphite particles having a D<sub>50</sub> particle size that is greater than 40 microns and less than or equal to about 100 microns. Instead, Davis describes expanded graphite particles that “preferably have an average particle size of less than 40 microns, more preferably between 18 microns and 30 microns, and most preferably between 24 microns and 28 microns.” (Davis, col. 3, lines 8-11). Applicants therefore request that the rejection of claims 22-27 be withdrawn.

**35 U.S.C. § 103(a) – Nardi**

The Examiner has rejected claim 45 under 35 U.S.C. § 103(a) as unpatentable over Nardi. As Applicants have noted above with respect to claims 39-44, Nardi does not suggest expanded graphite particles having a total pore volume greater than about 0.1 milliliter per gram. Thus, Applicants request that the rejection of claim 45 be withdrawn.

**35 U.S.C. § 103(a) – Davis & Nardi**

The Examiner has rejected claims 1-3, 7-21, and 39-49 under 35 U.S.C. § 103(a) as obvious over Davis in view of Nardi.

Davis could qualify as prior art only under 35 U.S.C. § 102(e). But the claimed invention and the subject matter of Davis were, at the time the invention was made, both owned by, or subject to an obligation of assignment to, the Gillette Company. Thus, under 35 U.S.C. § 103(c),

Davis does not qualify as prior art to the present application. Applicants therefore request that this § 103(a) rejection of claims 1-3, 7-21, and 39-49 be withdrawn.

**35 U.S.C. § 103(a) – U.S. Published Application No. 2001/0041293 (Barsukov) & Nardi**

The Examiner has rejected claims 1-3, 7-21, and 39-49 under 35 U.S.C. § 103(a) as obvious over U.S. Published Application No. 2001/0041293 (Barsukov) in view of Nardi. Applicants have cancelled claims 2, 3, 12, 13, and 17-21, thereby rendering the rejection of those claims moot.

As amended, claim 1 recites carbon particles comprising expanded graphite particles having a kerosene absorption equal to or greater than about 3.6 milliliters per gram. Support for amended claim 1 can be found, for example, in Table 1 on page 4 of Applicants' application, in which expanded graphite particles with kerosene absorption values of 3.6 milliliters per gram, 3.8 milliliters per gram, and 5.4 milliliters per gram are listed. As the Examiner has noted, "[Barsukov does] not expressly teach that the expanded graphite has a kerosene absorption greater than about 2.7 mL/g . . . ." (October 29, 2003 Office Action, page 7). Furthermore, as acknowledged by the Examiner, "Nardi teaches a preferred kerosene absorption range of 2.2-3.5 mL/g . . . ." (October 29, 2003 Office Action, page 10). Thus, the combination of Barsukov and Nardi does not result in the graphite particles of claims 1 and 7-9 and as such, the rejection of claims 1 and 7-9 should be withdrawn.

Amended claim 10 recites a cathode comprising expanded graphite particles having a BET surface area of from about 5 m<sup>2</sup>/g to about 15 m<sup>2</sup>/g. Support for the amendment to claim 10 can be found, for example, in Table 1 on page 4 of Applicants' application, in which expanded graphite particles having BET surface areas of 5.0 m<sup>2</sup>/g, 12.3 m<sup>2</sup>/g, and 13.9 m<sup>2</sup>/g are listed.

The combination of Barsukov and Nardi does not result in the cathode recited in claim 10. As the Examiner has noted, Barsukov does not "expressly teach that the expanded graphite has . . . a BET surface area greater than about 5 m<sup>2</sup>/g . . . ." (See October 29, 2003 Office Action, page 7). Furthermore, "Nardi teaches that the expanded graphite has a BET surface area of at least 18 m<sup>2</sup>/g . . . ." (October 29, 2003 Office Action, page 7). Thus, Nardi

does not cure the deficiencies of Barsukov. Because the combination of Barsukov and Nardi does not describe or suggest the battery of claims 10, 11, and 14-16, Applicants request that the rejection of these claims be withdrawn.

Claims 39-44 recite a cathode comprising expanded graphite particles having a total pore volume greater than about 0.1 milliliter per gram. As the Examiner has noted, Barsukov does not describe such a cathode. (See October 29, 2003 Office Action, page 7). Nardi does not cure the deficiencies of Barsukov because, as discussed above, Nardi does not inherently describe or suggest the claimed cathode. Thus, Applicants request withdrawal of the rejection of claims 39-44.

#### **Double Patenting**

The Examiner has rejected claims 22-27 under the doctrine of obviousness-type double patenting as unpatentable over claims 1-16 of U.S. Patent No. 6,451,486. The Examiner also has rejected claims 1-3, 7-21, and 39-49 under the doctrine of obviousness-type double patenting as unpatentable over claims 1-16 of U.S. Patent No. 6,451,486 in view of WO 99/34673.

Applicants request that the rejections be reconsidered in view of the amendments to the present claims. If the Examiner maintains the rejections, and the claims are otherwise allowable, Applicants will consider submitting an appropriate terminal disclaimer at that time.

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Applicants believe that the claims are in condition for allowance, which action is requested. Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

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